

IN THE CLAIMS

What is claimed is:

- 1 **1.** A dynamic server directory system, comprising:
 - 2 at least one relational table that includes a plurality of entries that can each store location data, status data, and feature data of server processes in a distributed computing system that services client requests; and
 - 5 an interface that may provide at least one entry from the at least one relational table to a client.

- 1 **2.** The dynamic server directory system of claim 1, wherein:
 - 2 the location data of an entry may comprise a network address; and
 - 3 the entry may include a server name to identify a specific server at the network address.

- 1 **3.** The dynamic server directory system of claim 1, further including:
 - 2 a route table that can indicate at least one communication route to a server host and the status of said route.

- 1 **4.** The dynamic server directory system of claim 1, further including:
 - 2 a plurality of dynamic server directory agents that reside on different host machines than the dynamic server directory, each dynamic server directory agent
 - 3 caching at least a portion of the at least one relational table.

1 5. The dynamic server directory system of claim 1, wherein:

2 the relational table includes a key field that may be searched by a key

3 prefix value that can filter entries according to client request criteria

1 6. The dynamic server directory system of claim 1, further including:

2 a plurality of dynamic server directory agents that reside on different
3 host machines than the dynamic server directory, each dynamic server
4 directory agent forwarding new server process information to the dynamic
5 server directory when a new server process is added; and

6 the dynamic server directory creating a new entry in the at least one
7 relational table corresponding to the server process and forwarding the
8 updated relational table to dynamic server directory agents.

1 7. The dynamic server directory system of claim 1, wherein:

2 the distributed computing system includes at least two subsystems that
3 provide different functions; and

4 the at least one relational table includes a plurality of relational tables,
5 each relational table including entries corresponding to server processes of
6 one of the subsystems.

1 8. The dynamic server directory system of claim 1, wherein:

2 the at least one relational table includes a server relational table that
3 identifies a server route corresponding to a given server process and a route

4 relational table that identifies a communication route corresponding to a given
5 host machine.

1 9. The dynamic server directory system of claim 8, further including:
2 the interface searches the server relational table and then the route
3 relational table to determine the route to a host machine for a given server
4 process.

1 10. The dynamic server directory system of claim 1, further including:
2 a plurality of dynamic server directory agents that reside on different
3 host machines than the dynamic server directory, each dynamic server
4 directory agent receiving periodic status communications from at least one
5 server process and notifying the dynamic server directory when status
6 communications fail; and
7 the dynamic server directory changes entries in the at least one
8 relational table in response to status communication failures.

1 11. The dynamic server directory of claim 10, further including:
2 a service master process that may subscribe with the DSD agent to be
3 notified of changes to the at least one relational table, the service master
4 performing at least one predetermined error response when the change to the
5 at least one relational table indicates a status communication failure has
6 occurred in a server process; and

the dynamic server directory forwards changes in the at least one relational table to the DSD agent.

12. The dynamic server directory of claim 11, wherein:

the predetermined error response may be at least one response selected from the group consisting of: attempting to restart the server process corresponding to the failure, logging the failure error, notifying a system administrator, generating a work order for the server process corresponding to the error, activating another server process as a back-up to the server process corresponding to the failure, shutting down a host machine for the server process corresponding to the failure, and rebooting a host machine for the server process corresponding to the failure.

1 13. The dynamic server directory of claim 1, wherein:

a plurality of client processes that may subscribe to be notified of changes to the at least one relational table, a client process performing a resubmission of all requests sent on a particular currently valid server route when the change to the at least one relational table indicates a failure in the server process, or the route to the server process.

1 **14.** A system, comprising:

2 a plurality of servers that may perform predetermined operations

3 according to requests from clients; and

4 a dynamic server directory that includes a plurality of relational tables,
5 each relational table storing feature information for the plurality of servers, the
6 feature information being accessible by a client to determine which server
7 may service a particular client request; and

8 a plurality of dynamic server directory agents that may perform
9 predetermined operations according to client subscriptions.

10 **15.** The system of claim 14, wherein:

1 the plurality of servers include storage servers that may access stored
2 files and metadata servers that may access metadata for the stored files.

1 **16.** The system of claim 14, wherein:

2 the dynamic server directory agent includes an interface that may
3 provide access to the relational tables in response to an action selected from
4 the group consisting of: the addition of a new entry to a relational table,
5 deletion of a entry from a relational table, search for a key, search for a server,
6 subscription to notification of changes in status, and maintenance of current
7 process information..

1 **17.** The system of claim 14, further including:

the plurality of servers reside on server host machines; and each server host machine further includes a dynamic server directory agent that caches at least a portion of at least one relational table and is accessible by a client.

18. A method of controlling client requests in a distributed computing system having a plurality of servers, comprising the steps of:

maintaining server information in a dynamic server directory (DSD) e servers that indicates availability of a server for particular client ts;

caching server information in dynamic server directory agents (DSDAs);

selecting a server for a particular client request from server information cached in a DSD;

monitoring servers with DSDAs and forwarding server status information to the DSD;

changing server information in the DSD for a selected server in response to server status information; and

forwarding changed server information to DSDAs.

1 19. The method of claim 18, wherein:

selecting a server includes a client invoking an interface function of a DSDA residing on the same host machine as the client.

1 **20.** The method of claim 18, wherein:

2 selecting a server includes searching a first server information
3 relational table to determine a server route including a host machine on which
4 a desired server resides, and searching a second server information relational
5 table to determine a route to the host machine.

1 **21.** The method of claim 18, wherein:

2 the server information includes
3 at least one server relational table having entries that comprise
4 server identification, server route identification including host machine
5 identification, and a server status indication for each server process,
6 and
7 at least one route relational table having entries that comprise
8 host machine identification, route information, and host machine status
9 indication.

1 **22.** The method of claim 21, further including:

2 the plurality of servers includes a gateway servers that control access
3 to the distributed computing system, metadata servers that access metadata for
4 stored files, and storage servers that store files; and
5 the at least one server relational table includes a gateway server
6 relational table, a metadata server relational table, and a storage server
7 relational table.